Claims

[c1] What is claimed is:

1.An automatic control method for generating stable laser power of an optical disk drive, the optical disk drive comprising:

an optical pick-up unit for emitting laser beams;

a microprocessor for generating control signals; and

an analog front end (AFE) circuit for receiving the control signals generated by the microprocessor, generating a writing voltage for the optical pick-up unit according to the control signals so as to make the optical pick-up unit emit laser beams, receiving watching signals generated when the optical pick-up unit emits laser beams, and adjusting the writing voltage according to a difference amount between the watching signals and a reference voltage so as to adjust a magnitude of the laser beams emitted by the optical pick-up unit;

the control method comprising:

generating a first function according to a relationship between the control signals transmitted from the microprocessor to the analog front end circuit and the difference amount between the watching signals and the reference voltage;

wherein when the analog front end circuit receives the watching signal, the analog front end circuit adjusts the writing voltage according to the first function and a reference function so as to adjust the magnitude of the laser beams emitted by the optical pick-up unit.

[c2] 2.The automatic control method of claim 1 wherein generating the first function comprises:

using the microprocessor to generate a plurality of control signals;

measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and

generating the first function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c3] 3.The automatic control method of claim 1 wherein generating the reference function comprises:

generating second functions corresponding to a plurality of optical disk drives;

and

generating the reference function according to the second function of each optical disk drive of the plurality of optical disk drives.

[c4] 4.The automatic control method of claim 3 wherein generating the second function of each optical disk drive comprises:

using the microprocessor of the optical disk drive to generate a plurality of control signals;

measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and

generating the second function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c5] 5.The automatic control method of claim 1 wherein the control signal is an initial value that makes the optical pick-up unit of the optical disk drive start to generate laser beams.

[c6] 6.The automatic control method of claim 1 wherein the optical disk drive further comprises a differential amplifier for calculating the difference amount between the watching signals and the reference voltage.

[c7] 7.The automatic control method of claim 6 wherein the optical disk drive further comprises an analog to digital converter (ADC) for converting output signals of the differential amplifier into digital signals and transmitting the converted digital signals to the microprocessor.

[c8] 8.The automatic control method of claim 1 wherein the optical disk drive further comprises a digital to analog converter (DAC) for converting the control signals generated by the microprocessor into analog signals and transmitting the converted analog signals to the analog front end circuit.

[c9] 9.The automatic control method of claim 1 wherein the optical disk drive is a rewritable compact disk drive (CD-RW drive).

[c10] 10.The automatic control method of claim 1 wherein the optical disk drive is a

recordable compactdisk drive (CD-R drive).

[c11] 11.An optical disk drive comprising:
an optical pick-up unit for emitting laser beams;
a microprocessor for generating control signals; and
an analog front end (AFE) circuit for receiving the control signals generated by the microprocessor, generating a writing voltage for the optical pick-up unit according to the control signals so as to make the optical pick-up unit emit laser beams, receiving watching signals generated when the optical pick-up unit emits laser beams, and adjusting the writing voltage according to a difference amount between the watching signals and a reference voltage so as to adjust a magnitude of the laser beams emitted by the optical pick-up unit;
wherein a first function is generated by a relationship between the control signals transmitted from the microprocessor to the analog front end circuit and a difference amount between the watching signals and the reference voltage, when the analog front end circuit receives the watching signals, the analog front end circuit adjusts the writing voltage according to the first function and a reference function so as to adjust the magnitude of the laser beams emitted by the optical pick-up unit.

[c12] 12.The optical disk drive of claim 11 wherein generating the first function comprises:
using the microprocessor to generate a plurality of control signals;
measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and
generating the first function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c13] 13.The optical disk drive of claim 11 wherein generating the reference function comprises:
generating second functions corresponding to a plurality of optical disk drives; and
generating the reference function according to the second function of each

optical disk drive of the plurality of optical disk drives.

[c14] 14.The optical disk drive of claim 13 wherein generating the second function of each optical disk drive comprises:

using the microprocessor of the optical disk drive to generate a plurality of control signals;

measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and

generating the second function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c15] 15.The optical disk drive of claim 11 wherein the control signal is an initial value that makes the optical pick-up unit of the optical disk drive start to generate laser beams.

[c16] 16.The optical disk drive of claim 11 further comprising a differential amplifier for calculating the difference amount between the watching signals and the reference voltage.

[c17] 17.The optical disk drive of claim 16 further comprising an analog to digital converter (ADC) for converting output signals of the differential amplifier into digital signals and transmitting the converted digital signals to the microprocessor.

[c18] 18.The optical disk drive of claim 11 further comprising a digital to analog converter (DAC) for converting the control signals generated by the microprocessor into analog signals and transmitting the converted analog signals to the analog front end circuit.

[c19] 19.The optical disk drive of claim 11 being a rewritable compact disk drive (CD-RW drive).

[c20] 20.The optical disk drive of claim 11 being a recordable compactdisk drive (CD-R drive).

[c21] 21.A computer system comprising an optical disk drive, the optical disk drive

comprising:

an optical pick-up unit for emitting laser beams;

a microprocessor for generating control signals; and

an analog front end (AFE) circuit for receiving the control signals generated by the microprocessor, generating a writing voltage for the optical pick-up unit according to the control signals so as to make the optical pick-up unit emit laser beams, receiving watching signals generated when the optical pick-up unit emits laser beams, and adjusting the writing voltage according to a difference amount between the watching signals and a reference voltage so as to adjust a magnitude of the laser beams emitted by the optical pick-up unit;

wherein a first function is generated by a relationship between the control signals transmitted from the microprocessor to the analog front end circuit and a difference amount between the watching signals and the reference voltage, when the analog front end circuit receives the watching signals, the analog front end circuit adjusts the writing voltage according to the first function and a reference function so as to adjust the magnitude of the laser beams emitted by the optical pick-up unit.

[c22] 22.The computer system of claim 21 wherein generating the first function comprises:

using the microprocessor to generate a plurality of control signals;

measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and

generating the first function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c23] 23.The computer system of claim 21 wherein generating the reference function comprises:

generating second functions corresponding to a plurality of optical disk drives; and

generating the reference function according to the second function of each optical disk drive of the plurality of optical disk drives.

[c24] 24.The computer system of claim 23 wherein generating the second function comprises:

using the microprocessor of the optical disk drive to generate a plurality of control signals;

measuring a plurality of difference amounts between the watching signals and the reference voltage corresponding to the plurality of control signals; and

generating the second function according to the plurality of control signals and the plurality of difference amounts between the watching signals and the reference voltage.

[c25] 25.The computer system of claim 21 wherein the control signal of the optical disk drive is an initial value that makes the optical pick-up unit of the optical disk drive start to generate laser beams.

[c26] 26.The computer system of claim 21 wherein the optical disk drive further comprises a differential amplifier for calculating the difference amount between the watching signals and the reference voltage.

[c27] 27.The computer system of claim 26 wherein the optical disk drive further comprises an analog to digital converter (ADC) for converting output signals of the differential amplifier into digital signals and transmitting the converted digital signals to the microprocessor.

[c28] 28.The computer system of claim 21 wherein the optical disk drive further comprises a digital to analog converter (DAC) for converting the control signals generated by the microprocessor into analog signals and transmitting the converted analog signals to the analog front end circuit.

[c29] 29.The computer system of claim 21 wherein the optical disk drive is a rewritable compact disk drive (CD-RW drive).

[c30] 30.The computer system of claim 21 wherein the optical disk drive is a recordable compact disk drive (CD-R drive).